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# Location-based services require a new approach from data providers

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## 1 Setting the scene

If the business analysts are to be believed, the Location Based Services (LBS) market will be worth tens of billions of pounds over the next few years. With numbers this big there seems to be a slice of the action for everyone! But can everyone really be a winner? Should we believe all the hype? Christopher Roper of Landmark Information Group puts things nicely into perspective when he says:

*'Location based services are roughly where the Internet was five years ago. In other words:*

- *everyone is talking about LBS as 'the next big thing';*
- *no one is quite sure how to make money out of them;*
- *the benefits are more obvious than the business model; and*
- *selling shovels is more profitable than digging for gold.*

*Like the Internet, LBS will happen and the number of people who make serious money will be balanced by those who get seriously burnt.'*

Most of us at this conference would prefer to be part of the first group – making serious money. But in a market as immature as LBS is today, there is no guarantee of success. What might have worked well in the past may be a lame duck in the dynamic and uncertain environment we are experiencing in the LBS market of today.

This paper looks at the developing LBS market and its impact on the GIS community. It goes on to consider the new and integrated approach that will be needed from the providers of spatial data through a case study that looks at the development of a generic Points of Interest (POI) database that could meet the needs of a wide range of users.

## 2 Understanding location based services

Most people would agree that location based services are more than 'maps on a mobile phone', in fact much more. In simple terms, there are 2 key elements:

- location information (the content), and
- the delivery of this information (the service).

Content includes almost anything that can be given a 2-or 3-dimensional set of coordinates: people, businesses, places, buildings, topographic and hydrographic features, vehicles, street furniture (telephone boxes, traffic lights, speed cameras), events and even the weather.

The service element comprises both the packaging of location information in an application and its distribution to end users through various channels and to a wide range of devices such as PCs, mobile phones, hand-held computers and digital TVs. Specific services might include the supply of directory information ('where's my nearest Italian restaurant?'), traffic alerts and route finding; tracking of vehicles,

assets and people ('where's my child/ friend/ husband/ wife?'); or location based billing such as the automatic collection/payment of road and bridge tolls or parking fees.

What distinguishes LBS from the traditional publication and dissemination of geographic information is its dynamism; obtaining information on the move, using it, discarding it and then asking for more. In the same way that the Internet is putting maps into the hands of businesses and consumers like never before, LBS will become pervasive, affordable and just as indispensable.

Let's compare the traditional value chain for distributing geographic information (Figure 1) with that emerging for LBS (Figure 2).

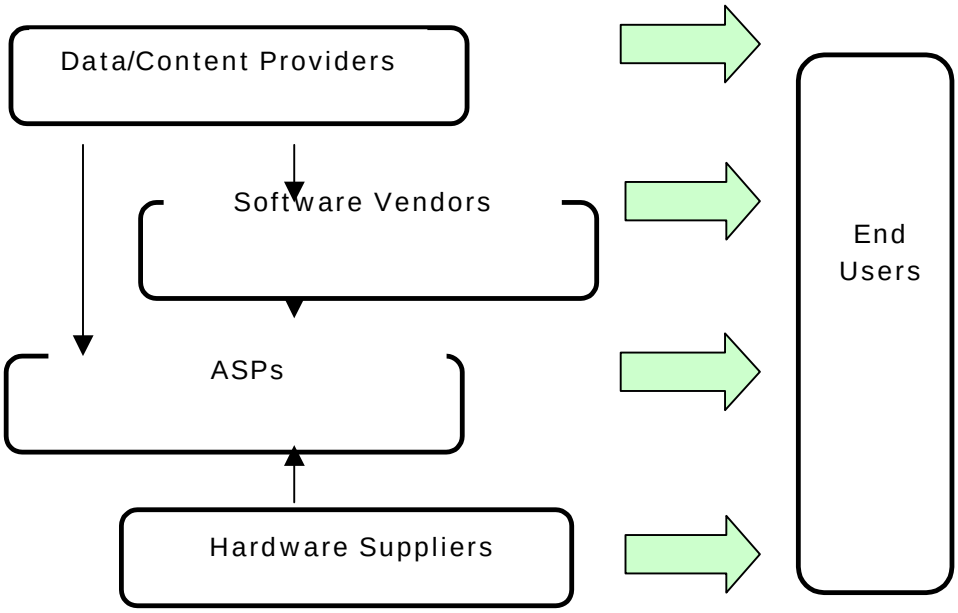



*Figure 1 – Traditional value chain for distribution of geographic information*

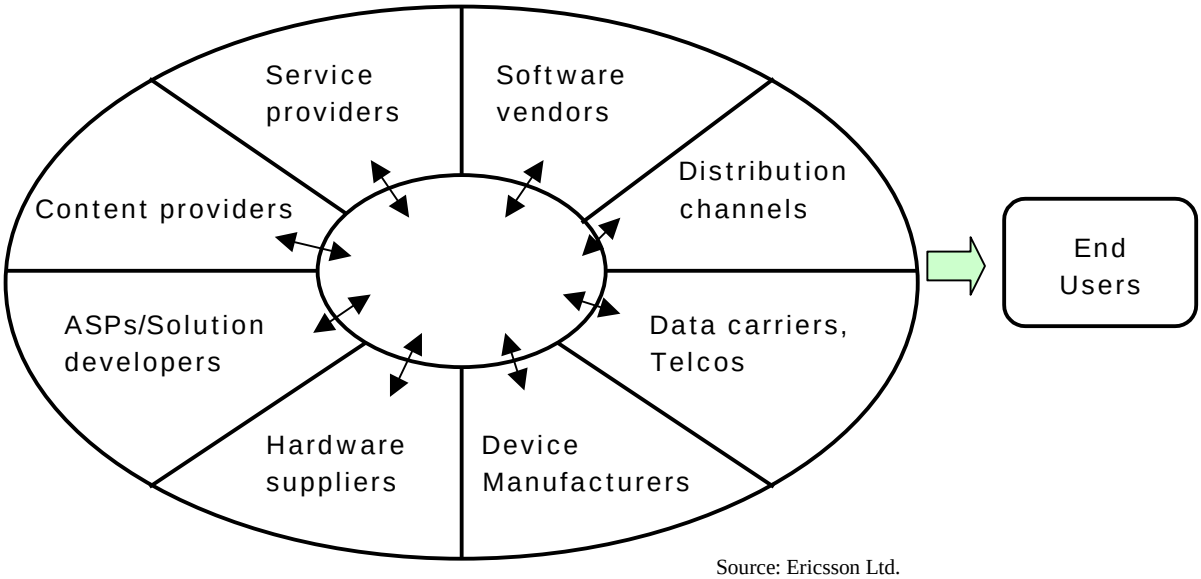
Here, geographic information reaches the end user by one of 3 routes:

- directly from the data/content provider (such as Ordnance Survey);
- through application service providers (ASPs) who integrate content and software to deliver a total solution (Yeoman Group, Multimap);
- from software vendors who resell content to offer customers a one-stop shop for data, software and consultancy services (ESRI, MapInfo).

Hardware purchases are usually independent of content or solutions.

The situation in today's LBS market is very different. Ideas for killer applications abound but markets have to be made and consumers educated and persuaded. In these early stages of development, no one has the answers to all the questions. In the rush to validate current thinking and identify complementary developments, everyone can, and often does, talk to everyone else. The net result is the replacement of the linear value chain by an emerging *value web or network* as shown in Figure 2.

*Figure 2 – Emerging Value Network for LBS*




Source: Ericsson Ltd.

Compared to Figure 1 we see there are at least twice as many components. Joining the content providers, software vendors, ASPs and hardware suppliers are the data carriers/network operators (such as Vodafone, BT Cellnet, Virgin, Hutchison3g), service providers/portals (Vizzavi, Yahoo, AOL), device/handset manufacturers (Benefon, Ericsson, Nokia) and distributors such as Carphone Warehouse. Additionally, there are positioning specialists (Cellpoint, Cambridge Positioning Systems), Internet Service Providers (Freeserve, AltaVista), payment service providers (Cybercash, Cybersource) and other financial organisations (Visa, Mastercard and the clearing banks).

Within the different components, there is a wider range of activities and a greater number of companies jockeying for position. For example, 'white label' ASPs (such as Webraska and Airflash) bring together state-of-the-art proprietary technology with third-party content for licensing to the mobile operators and service providers. Amongst the content providers, we find blue-chip companies such as Reuters and the BBC and a host of smaller organisations such as Advanced Wireless, creators of "Botfighters", a cross between "battleships" and "paint-balling" played out in the cellular space of the mobile networks.

## 3 What this means for the GIS community

The obvious issues that arise are those of opportunity, competition and profitability. A new market like LBS attracts established organisations operating in related markets, companies from totally unrelated markets and start-ups created solely to exploit the new opportunities that exist. In this exciting and dynamic environment, everyone is seeking a competitive edge. This has led to the formation of numerous partnerships and alliances, testimony to which is evident on the web sites of many key players. Just how many are supported by robust business models is a matter for speculation, but the price of failure is too great to contemplate so that sharing ideas and investment is a great way to reduce risk and uncertainty.

Most of the larger GIS companies have moved quickly into the LBS space and established alliances with one or more organisations from other parts of the value network. Those who do not will find it extremely difficult to maintain their identity (or even worse their existence) as customers increasingly seek a packaged solution or services from a single supplier. Increasingly also, GIS is likely to be absorbed in the melee of LBS development. Making the market and educating the customer will take time and a great deal of money and for the time being, these investments have to be subsidised by income from established markets. Revenues will need to be made from 2G and 2.5G bandwidths as the introduction of robust 3G services falls further and further behind schedule. If you accept Chris Roper's proposition that '*the number of people who make serious money will be balanced by those who get seriously burnt',* then it's fair to say that some GIS companies will be amongst those seeking medical treatment.

## 4 Case Study – Points of Interest Database

'Points of Interest' (POI) has become a portmanteau term that can include anything from historical sites to company branches. They can be described generically - such as hills and health centres - or as distinctive features selected for a specific mapping environment - for example, the branches of Barclays banks in Hampshire shown in relationship to estate agents' offices. Existing providers of POI – business directory vendors like Yellow Pages and digital mapping specialists like TeleAtlas and Navtech – can provide only a fraction of the data that the market requires to deliver the proposed Location Based Services that are supposedly the 3G killer applications of tomorrow.

It is a fact that no single data provider has all the answers, something that Ordnance Survey recognised when it invited expressions of interest from across the business spectrum to help it build a Points of Interest database. The culmination of this exercise was the formation of a joint venture company PointX Ltd. (a consortium made up of Ordnance Survey, Landmark Information Group and Red Volcano) to provide a skeletal data set that can be used to link information from a number of different sources from the public and private sectors.

A number of technical and commercial issues have been addressed during the specification of the PointX dataset, including the management of intellectual property, the problems of maintaining data quality in rapidly changing data sets, and the problem of setting boundaries to what PointX is seeking to achieve. Some of the problems addressed arise from the highly speculative and intensely competitive world of mobile telecoms network operators, each seeking content that will enable them to compete more effectively with their peers. PointX seeks to provide a generic solution to all comers.

The PointX proposition is predicated on the assumption that there will be a need for improved (more accurate, more complete, more consistent and more current) POI data to deliver new and enhanced digital information services over the web and over mobile phones in the next 3 to 4 years. There will undoubtedly be a period of hard slog as the database is assembled and establishes itself in the marketplace. Although the OS and Landmark brands will undoubtedly help, it will have to sell on merit.

The business model that we have proposed depends on providing a very skeletal layer of location data without any of the more ephemeral time-dependent attributes (e.g. the location of the Odeon cinema in Southampton, but not what is showing nor the price of tickets). This is quite a radical business model and depends on establishing good relationships with a significant number of specialised data providers and value added resellers as the data will not work on its own in many cases.

Looking back at the value chain and value networks (Figures 1 and 2 above), PointX is very much a part of the tangled web. It has begun life through the union of three very different and distinct businesses. Its future survival – like that of many other companies in the LBS arena – will depend on its ability to choose its partners wisely.